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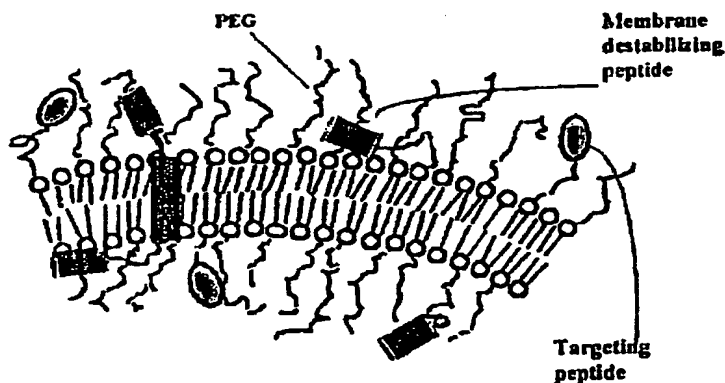
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(54) Title: TARGETED ARTIFICIAL GENE DELIVERY

TAGD Surface Engineering



(57) Abstract: Novel and improved compositions and methods for gene therapy are provided. In particular, a targeted artificial gene delivery ("TAGD") vehicle is provided, comprising a multifunctional artificial surface moiety surrounding a recombinant viral particle (nucleocapsid) or recombinant core for gene delivery.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/22619

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/87 C12N15/86 A61K47/48 A61K48/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, BIOSIS, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WO 96 21036 A (VIAGENE INC) 11 July 1996 (1996-07-11)</p> <p>the whole document, in particular page 5 line 28 to page 6 line 5, page 12 and page 27 line 30 to page 28 line 24</p> <p style="text-align: center;">--- -/--</p>	<p>1-7, 9, 10, 16, 18, 19</p>

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

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- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *8* document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Int. Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FASBENDER A ET AL: "COMPLEXES OF ADENOVIRUS WITH POLYCATIONIC POLYMERS AND CATIONIC LIPIDS INCREASE THE EFFICIENCY OF GENE TRANSFER IN VITRO AND IN VIVO" JOURNAL OF BIOLOGICAL CHEMISTRY, AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE, MD, US, vol. 272, no. 10, 7 March 1997 (1997-03-07), pages 6479-6489, XP002060642 ISSN: 0021-9258 cited in the application the whole document, in particular page 6488 left column	1-3, 7, 18, 19, 21
X	WO 98 44938 A (ANDERSON W FRENCH ; GORDON ERLINDA MARIA (US); HALL FREDERICK L (US) 15 October 1998 (1998-10-15) the whole document, in particular paragraph bridging pages 17 to 18 and figure 18	1, 2, 4, 8, 9, 18, 19
A	US 4 948 590 A (HAWROT EDWARD ET AL) 14 August 1990 (1990-08-14) the whole document, in particular column 6, lines 23-26 and column 18, lines 1-2	1-3, 8, 18
A	US 5 631 018 A (ZALIPSKY SAMUEL ET AL) 20 May 1997 (1997-05-20) cited in the application the whole document, in particular column 10 lines 20-32	1, 3, 4, 7, 16, 18, 19, 21-23
A	WO 97 40854 A (ANTIVIRALS INC) 6 November 1997 (1997-11-06) the whole text, in particular pages 24-25, 27 and figures 3, 12	1, 3-7, 10, 12, 17, 19-23
A	JANUSZESKI M M ET AL: "Functional analysis of the cytoplasmic tail of Moloney murine leukemia virus envelope protein" JOURNAL OF VIROLOGY, US, THE AMERICAN SOCIETY FOR MICROBIOLOGY, vol. 71, no. 5, May 1997 (1997-05), pages 3613-3619, XP002130560 ISSN: 0022-538X the whole document	5, 6, 10, 11, 13-15
P, X	WO 00 02909 A (ANDERSON W FRENCH ; ROZENBERG YANINA (US); UNIV SOUTHERN CALIFORNIA) 20 January 2000 (2000-01-20) the whole document, in particular pages 19-27	1, 2, 5, 10, 11, 13-15, 18

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 00/22619

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claim 18 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte. Application No

PCT/US 00/22619

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9621036	A	11-07-1996	AU 4690596 A	24-07-1996
WO 9844938	A	15-10-1998	AU 6890398 A EP 0973538 A	30-10-1998 26-01-2000
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